

NOTICE

All drawings located at the end of the document.

AR

REF-03-RF-013-12; 03-RF-013-12
JLB-007-03

**INDUSTRIAL AREA
SAMPLING AND ANALYSIS PLAN
FY03 ADDENDUM #IA-03-11
IHSS GROUP 000-2
ORIGINAL PROCESS WASTE LINES**

Approval received from the Colorado Department of Public Health and Environment
(August 28, 2003)
Approval letter contained in the Administrative Record.

September 2003

ADMIN RECORD

IA-A-001622

CEX+109-01

Y28

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ACRONYMS

ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
FY	Fiscal Year
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
MDL	method detection limit
mg/kg	milligram per kilogram
N/A	not applicable
nCi/g	nanocurie per gram
OPWL	Original Process Waste Line
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
psig	pounds per square inch - gauge
RFCA	Rocky Flats Cleanup Agreement
SAP	Sampling and Analysis Plan
SVOC	semivolatile organic compound
UBC	Under Building Contamination
VOC	volatile organic compound

1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001) Addendum #IA-03-11 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for IHSSs, and Potential Areas of Concern (PACs) proposed for characterization during Fiscal Year (FY) 03. This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for the IHSS Group and associated IHSSs and PACs listed in Table 1. The location of the IHSS Group, and IHSSs and PACs proposed are shown on Figure 1.

Table 1
IASAP Addendum #IA-03-11 IHSS Groups

IHSS Group	IHSS/PAC/UBC Site
000-2	000-121 – Original Process Waste Line (OPWL)
	700-123.2 – Valve Vault West of Building 707
	100-602 – Building 123 Process Waste Line Break
	000-121 – Tank 29 – OPWL (Tank 207)
	000-121 – Tank 31 – OPWL
	700-127 – Low-Level Radioactive Waste Leak
	700-147.1 – Process Waste Line Leaks
	700-162 – Radioactive Site 700 Area

This IASAP Addendum is based on the requirements of the Rocky Flats Cleanup Agreement (RFCA) Attachment 14, which specifies known and suspected Original Process Waste Line (OPWL) leaks as well as how soil samples will be collected. Twenty-seven known and 52 suspected OPWL leak locations are described in RFCA Attachment 14 (DOE et al 2003). Many of these OPWL leak locations were sampled in accordance with other IASAP addenda or are already included in other IHSS Group IASAP addenda.

IASAP Addendum #IA-03-11 includes the following:

- Locations of all RFCA-specified OPWL known and suspected leak locations;
- Locations of all previously sampled or planned samples at known and suspected leak locations;
- Locations of samples at known and suspected leak locations that will be described and collected in accordance with IHSS Group 700-2 and 700-7 IASAP addenda;
- Location and description of samples at known and suspected leak locations that will be collected under this IASAP Addendum; and
- Location and description of samples at IHSSs, PACs, and Tanks in IHSS Group 000-2, which will be collected under this IASAP Addendum.

Twenty-three known and 24 suspected OPWL leak locations were sampled or will be sampled in accordance with other IASAP Addenda. Four known and 31 suspected OPWL leak locations are described in this Addendum. Three RFCA-specified suspected leaks will not be

sampled as determined through the consultative process however three new sampling locations were added along P-15. Three sampling locations in associated IHSSs and PACs will be sampled in accordance with this addendum. A total of 38 sampling locations are described in this IASAP Addendum, of these 5 sampling locations will be collected as part of the IHSS Group 700-3 project.

1.1 EXISTING OPWL INFORMATION

Existing data for these IHSSs are available in Appendix C of the IASAP (DOE 2001), the Historical Release Report (HRR) (DOE 1992- 2002), and the Industrial Area Data Summary Report (DOE 2000). Table 2 presents the PCOCs. Figure 2 shows OPWL designations.

Table 3 lists known and suspected OPWL leak locations or lines in accordance with Rocky Flats Cleanup Agreement (RFCA) Attachment 14 (DOE et al 2003) and the draft ER RSOP Modification (DOE 2003a). Many of the known or suspected OPWL leak locations were sampled in accordance with other IASAP addenda or are already included in other IHSS Group IASAP addenda. These sampling locations and the associated IASAP addenda for each leak location are listed in Table 3. The known and suspected leak locations as described in RFCA Attachment 14 and the ER RSOP are shown on Figure 3. OPWL sampling locations previously collected and those included in other sampling addenda are shown on Figure 4.

1.2 EXISTING IHSS, PAC, AND TANK INFORMATION

OPWLs are associated with one PAC, several IHSSs, and two tanks as listed in Table 1 and shown on Figure 1. The PCOCs are listed in Table 2 and the associated OPWL designations and information are listed in Table 3.

1.2.1 PAC 100-602 – Building 123 Process Waste Line Break

PAC 100-602 –Building 123 Process Waste Line Break is the result of potential leaks around Valve Vault 18. Several horizontal directional drilling samples (DOE 2003b) were collected along the line between Manholes 1, 2, and 3. Additionally, one sample, BU38-002, was collected from the vicinity of Manhole 2 during the UBC 123 accelerated action. The pipeline between Manholes 1 and 2 was removed during this action and the pipeline between Manholes 2 and 3 was not found. The length of pipe between Manhole 2 and Valve Vault 18 was not removed during this action. The soil surrounding Valve Vault 18 will be sampled as part of IASAP Addendum #IA-03-11 activities.

1.2.2 IHSS 123.2 – Valve Vault West of Building 707

IHSS 123.2 – Valve Vault West of Building 707 is the result of potential leaks at the intersection of lines P-12 and P-14. This location is listed as known OPWL leak location P-14-1, sampling location CE42-002.

1.2.3 IHSS 147.1 – Process Waste Line Leaks

IHSS 147.1 – Process Waste Line Leaks is the result of potential leaks in line P-13 from Building 881. Process waste was found in the manhole near the intersection of P-11, P-12, and P-13. Subsurface soil will be sampled at sampling location CE40-000, which is at the intersection of P-11, P-12, and P-13.

Table 2
Potential Contaminants of Concern IHSS Group 000-2

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
000-2	000-121 - OPWL	Radionuclides Metals VOCs	Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001]) IA Data Summary Report (DOE 2000)	Biased in accordance with RFCA Attachment 14
	700-123.2 - Valve Vault West of Building 707	Radionuclides Metals VOCs	Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Biased in accordance with RFCA Attachment 14
	100-602 - Building 123 Process Waste Line Break	Radionuclides	Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Biased in accordance with RFCA Attachment 14
	000-121 - Tank 29 - OPWL (Tank 207)	Radionuclides Metals VOCs	Surface and Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001]) IA Data Summary Report (DOE 2000)	No additional sampling required
	000-121 - Tank 31 - OPWL	Radionuclides Metals VOCs	Surface and Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Biased in accordance with RFCA Attachment 14
	700-127 - Low-Level Radioactive Waste Leak	Radionuclides	Surface and Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Biased in accordance with RFCA Attachment 14
	700-147.1 - Process Waste Line Leaks	Radionuclides Metals VOCs	Surface and Subsurface Soil	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Biased
	700-162 - Radioactive Site 700 Area	Radionuclides PCBs	Surface	HRR (DOE 1992-2002) Process knowledge (IASAP [DOE 2001]) IA Data Summary Report (DOE 2000)	No additional sampling required

**THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS
DOCUMENT**

**Industrial Area Sampling and
Analysis Plan FY03 Addendum No.
IA-03-11 IHSS Group 000-2
Original Process Waste Lines**

**Figure 4:
IHSS Group 000-2 Existing Sample
Locations**

September 2003

CERCLA Administrative Record document, IA - H - 001622

**U.S. DEPARTEMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

GOLDEN, COLORADO

Table 3
Reported or Suspected OPWL Leaks

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location *	New Sampling Location
P14-1	3-inch Saran-lined steel pipe inside a 10-inch vitrified clay pipe	Approximately 3 feet	Acid leaks at intersection of P-12 and P-14	000-2 IHSS 123.2	IA-03-11	NA	CE42-002
P-19-1	3-inch stainless steel	Approximately 3.5 feet	Valve vault northeast of Building 707	700-3	IA-03-04	CG44-005	NA
P-20-1	3-inch stainless steel	Approximately 4 feet	Reported release at intersection of P-20 and P-21	700-3	IA-03-04	CG46-006	NA
P-20-2	3-inch stainless steel	Approximately 4 feet	Valve vault northeast of Building 707	700-3	IA-03-04	CG46-005	NA
P-23-1	10-inch fiberglass or stainless steel pipe	Approximately 5 feet	Reported leak at Tank T-8	700-4	IA-03-01	CE49-000	NA
P-27-1	3-inch cast iron pipe	Approximately 6 feet	Reported release at intersection of P-27 and P-28	700-3	IA-03-04	CH47-000	NA
P-27-5	3-inch cast iron pipe	Approximately 6 feet	Leak south of road on July 21, 1980. Process wastewater flowed through a 30-foot culvert along fence and around to north side of Building 774 where it ended up in Bowman's Pond. Approximately 1,000 gallons leaked. Sampling indicated 2,500 pCi/L total alpha, 4,000 pCi/L total beta, 10,000 mg/L nitrate and a pH of 12.	700-4	IA-03-01	CG48-008 CH48-004	NA
P-29-1	4-inch cast iron and 4-inch stainless steel pipe	Approximately 5 feet	Area around Tanks T-14 and T-16 reported as area of release	700-4	IA-03-01	CH48-003 CH48-017 CH48-018 CH48-019	NA

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location *	New Sampling Location
P-34-1	4-inch stainless steel or steel pipe	Approximately 3.5 feet	Reported release at intersection of P-33 and P-34	700-4	IA-03-01	CG48-004	NA
P-34-2	4-inch stainless steel or steel pipe	Approximately 3.5 feet	Reported release at intersection of P-25 and P-34	700-3	IA-03-11	NA	CG47-005
P-34-3	4-inch stainless steel or steel pipe	Approximately 3.5 feet	Reported release in area of T-15 and T-17	700-4	IA-03-01	CG48-005	NA
P-36-1	3-inch PVC and stainless steel pipe	Approximately 4 feet	Release reported at intersection of P-36 and P-20	700-3	IA-03-04	CG46-007	NA
P-36-2	3-inch PVC and stainless steel pipe	Approximately 4 feet	Release reported at valve vault west of Pond 207A	000-1	IA-02-07	CJ46-000 CJ46-001 CJ46-002 CJ46-003 CJ46-004	NA
P-37-3	3-inch steel, PVC, and vitrified clay pipe (might be two lines)	Approximately 4.5 feet	Valves north of Building 777 were found to be leaking at a rate of 25 gallons per hour at 20 psig during leak testing.	700-3	IA-03-04	CH46-001	NA
P-42-1	3-inch cast iron or stainless steel pipe	Approximately 3.5 feet	Reported release at intersection of P-42 and P-37	700-3	IA-03-04	CH46-002	NA
P-42-3	3-inch cast iron or stainless steel pipe	Approximately 3.5 feet	Valves on south side of Tank T-29 (207) reported to be leaking	700-3	IA-03-04	CH46-000	NA
P-43-1	3-inch stainless steel pipe	Approximately 3.5 feet	Leak reported at valve vault north of Tank T-29 (207)	700-3	IA-03-04	CH47-001	NA
P-43-2	3-inch stainless steel pipe	Approximately 3.5 feet	Leak reported at valve vault southwest of Tank T-29 (207)	700-3	IA-03-04	CH46-003	NA
P-4-1	4-inch cast iron	Approximately 3.5 feet	Leak at intersection of P-4 and Tank T-3	400-8	IA-03-01	BV38-004	NA

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location*	New Sampling Location
P-4-2	4-inch cast iron	Approximately 4 feet	Leak at intersection of P-4 and P-6. There is a manhole at this location that is 8 feet deep.	000-2	IA-03-11	NA	CE38-000
P-4-8	4-inch cast iron	Approximately 3.5 feet	Leak 30 feet east of driveway south of Building 441	400-8	IA-03-01	BW38-002	NA
P-4-12	4-inch cast iron	Approximately 3.5 feet	Leak at check valve south of Building 441	400-8	IA-03-01	BW38-001	NA
P-4-18	4-inch cast iron	Approximately 3.5 feet	Leak 31 feet east of driveway behind Building 441. This is likely in the same area as P4-8 above and could be the same leak.	400-8	IA-03-01	BW38-002	NA
P-4-19	4-inch cast iron	Approximately 3.5 feet	Leak reported 94 feet east of driveway behind Building 441	400-8	IA-03-01	BW38-004	NA
P-5-1	4-inch cast iron	Approximately 3.5 feet	Leak occurred 8 feet inside fence toward Building 444	400-3	IA-03-12	BY37-000	NA
P-5-2	4-inch cast iron	Approximately 3.5 feet	Possible leak found from leak test 8 feet out from Building 444	400-3	IA-03-6	BX37-000	NA
P-40-2	6-inch fiberglass line	Approximately 5 feet	Leak reported at settling tank near B-2 pond. This line has been removed in this area.	000-2	IA-03-6	NA	CW46-000

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location*	New Sampling Location
Suspected Leaks							
P-4	4-inch cast iron	Approximately 4 feet	Leaks suspected at entire line	000-2	IA-03-11	NA	BW38-005 BX38-024 BY38-012 BY38-013 BZ38-002 CA38-000 CA38-001 CB38-001 CB38-002 CC38-000 CD38-000 CD38-001 CD38-002
P-14	3-inch Saran lined steel pipe inside a 10-inch vitrified clay pipe	Approximately 3 feet	Leaks suspected at entire line	700-2	IA-03-16	CE42-000 CE42-001 CF43-000 CF43-001 CG44-008 CG44-009	NA
P-15	3-inch stainless steel inside 10-inch vitrified clay	Deeper than 6 feet	Leaks suspected at entire line	700-2	IA-03-16	CE43-005 CE44-013 CF44-014	NA
P-16	3-inch PVC pipe	Approximately 10 feet	Leaks suspected at line/tank intersection	500-3	IA-03-12	CE43-003 CD43-013	NA
P-17	3- and 4-inch glass/4-inch PVC inside 6-inch glass pipe	Approximately 7 feet	Leaks suspected at pipe join	500-3	IA-03-12	CD44-001 CD43-018	NA

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location *	New Sampling Location
P-26	1.5-inch PVC or stainless steel and a second PVC pipe of unknown diameter	Approximately 3 feet	Leaks suspected at entire line	000-1	IA-02-07	CH48-000 CH48-016 CI48-000 CI48-001 CI48-002 CJ48-000 CJ48-001 CK48-001	NA
P-27	3-inch cast iron pipe	Approximately 6 feet	P-27: Entire line was identified as an area of a reported release.	700-4 000-2	IA-03-01 IA-03-11	CH48-021	CH47-004 CH47-003
P-28	3-inch cast iron and 3-inch stainless steel	Approximately 5 feet	Leaks suspected at entire line	000-2	IA-03-11	NA	CH47-003 (also P-27) CH47-006 CH48-022 CH48-023 CH48-024
P-29	4-inch cast iron and 4-inch stainless steel pipe	Approximately 5 feet	A leak of 45 gallons per hour at a pressure of 20 psig detected during a 1971 leak test.	700-4 700-3	IA-03-01	CH48-003 CH48-017 CH48-018 CH48-019	NA
P-32	6-inch vinyl chloride pipe, 4-and 6-inch cast iron, and 4-and 6-inch steel pipe		Leak suspected at pipe join	700-3	IA-03-04	CE44-006	NA
P-34.1	4-inch stainless steel or steel pipe	Approximately 3.5 feet	Leak suspected at line segment	700-3	IA-03-011	NA	CH47-005
P-36/37/38	3-inch PVC and stainless steel/3-inch steel, PVC, and vitrified clay/ 6-inch and 10-inch vitrified clay pipe	Approximately 3 to 5 feet	Leak suspected at pipe join	700-7	IA-03-15	CJ46-005	NA

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location *	New Sampling Location
P-37	3-inch steel, PVC, and vitrified clay pipe (might be two lines)	Approximately 4.5 feet	North half of line west of Pond 207A has been reported as an area of release.	000-1	IA-02-07	CJ46-000 CJ46-003 CI46-000 CI46-001	NA
P-38	6-inch and 10-inch vitrified clay pipe	Approximately 3 to 5 feet	Leak suspected at line segment	700-7	IA-03-15	CI46-000 CI46-001	NA
P-39	6-inch vitrified clay pipe	Approximately 10 feet	Leaks suspected at east outfall	000-2	IA-03-11	NA	CQ44-000 CQ44-001 CQ44-002 CR44-000
P-40	6-inch fiberglass pipe	Approximately 10 feet	Leaks suspected at east outfall	000-2	IA-03-11	NA	CV46-000
P-41	2- and 3-inch vitrified clay, black-iron, and stainless steel pipe	Approximately 5 feet	Pipeline west of Building 779 identified as an area where a release occurred.	700-3	IA-03-04	CH46-001 CH46-001 CH46-002 CH46-003 CG46-007	NA
P-42	3-inch cast-iron or stainless steel pipe	Approximately 3.5 feet	Area around Building 779 was reported to have a pipeline release.	700-7	IA-03-15	CH45-001 CH46-011 CH46-012 CH46-013	NA
P-43 Tank 29 (Tank 207)	3-inch steel pipe	Approximately 5 feet	Leaks suspected at pipe join	700-3	IA-03-04 IA-03-11	CH47-001 CH46-000	CH46-010 CH46-014 CH46-015
P-44	3-inch steel pipe	Approximately 3.5 feet	Pipeline in area east of Building 703 reported to have a leak.	700-3	IA-03-04 IA-03-11	CH47-001 CH46-000 CH46-001 CH46-002 CH46-003	CH46-010 (also P-43)

Leak Designation	Pipe Description	Depth	Leak Description	IHSS Group	Addendum	Existing Sampling Location*	New Sampling Location
P-45	3-inch steel pipe	Approximately 3.5 feet	Pipeline in area east of Building 703 reported to have a leak.	700-3	IA-03-11	NA	CH46-014 (also P-43) CH46-015 (also P-43)
IHSS Sampling							
IHSS/Pipe							
PAC 100-602 P-2	4-inch cast iron pipe	Approximately 5 feet	Leak suspected around Valve Vault 18	000-2	IA-03-11	NA	BU38-001
Tank 31 P-39	6-inch vitrified clay pipe	Approximately 10 feet	No reported leak	000-2	IA-03-11	NA	CO44-000
IHSS 147.1 P11/12/13	3-inch ribbed hose inside 10-inch vitrified clay/3-inch steel inside 10-inch vitrified clay/3-inch ribbed hose inside 4-inch fiberglass	Approximately 8 to 10 feet	Potential leak	000-2	IA-03-11	NA	CE40-000
Tank 29 (Tank 207)		Surface Soil	Contaminated tank	NA	NA	CH46-007 CH46-008 CH46-009	NA

* Multiple sampling locations may be associated with known or suspected leaks.

1.2.4 Tank 29

Tank 29 (Tank 207) is an aboveground storage tank located in the 700 Area northeast of Building 776. Tank 29 is surrounded by OPWLs P-44, P-45, and P-61. Three samples (CH46-007, CH46-008, and CG46-009) were collected from beneath the tank when the tank was removed.

1.2.5 Tank 31

Tank 31 is located off OPWL P-39 near Building 990. One sample will be collected from the soil beneath Tank 31.

2.0 SAMPLING

Proposed new sampling locations are the starting point for IHSS Group characterization. After characterization starts, the number and type of samples may change based on sampling results. Changes to sampling specifications will be considered in consultation with the regulatory agencies. All sampling locations are biased in accordance with RFCA Attachment 14 and the draft ER RSOP Modification (DOE 2003a).

2.1 OPWL SAMPLING

The proposed OPWL sampling specifications (number and types of samples) are listed in Table 4 and shown on Figure 5. Table 4 includes all sampling locations that will be sampled as part of this addendum. Samples will be collected at RFCA-specified known leaks to a depth of 8.5 feet. If the OPWL is deeper than 8.5 feet samples will be collected to the depth of the pipeline. All other samples will be collected to target the OPWLs. The consultative process will be used to determine the utility of sampling at lines where the depth of the pipeline is much deeper than anticipated.

Sampling locations include those listed as IHSS Group 000-2 as well as sampling locations that will be added to the 700-3 sampling effort and were not included in IASAP Addendum IA-03-04 (DOE 2003c). Sampling locations for IHSS Groups 700-2 and 700-7 will be described in IASAP Addenda IA-03-16 and IA-03-15 respectively.

Several sampling location adjustments were implemented through the consultative process and include the following:

- Sampling Location CG47-006 was deleted because it does not appear to target an OPWL;
- Two Sampling Locations (BY38-014 and CB38-000) were eliminated along P-4. Remaining sampling locations are located at the edges of the IA Groundwater Plume concentration boundaries; and
- Three new Sampling Locations (CE43-005, CE44-013, and CF44-014) were added along P-15.

OPWL will be located using two methods Ground Penetrating Radar (GPR) and line-of-site estimation. GPR will be used to determine the location of pipelines where practical. Line-of-site estimation will be used where GPR is not practical or to gain additional information. Pipeline location and depth will be estimated from manholes and valve vaults. At several initial sampling locations in the 700 Area, the location of the pipeline will be verified by excavation. If soil

analytical results indicate that PCOCs are present in concentrations less than RFCA ALs, the pipeline location will be excavated to determine if the sampling location was representative of the pipeline location. If excavations indicate that the pipelines were adequately sampled, remaining pipelines will only be excavated if required for remediation.

Based on field conditions additional depth intervals may be collected to adequately characterize soil surrounding OPWL.

2.1.1 Step-Out Sampling

Step-out sampling will be conducted if characterization results indicate plutonium activities greater than 3nCi/g. Step-out sampling will be conducted in accordance with RFCA Attachment 14. Step-out sampling will be approximately two meters on either side of the initial sampling location, perpendicular to the piping run, and between five and ten meters on either side of the initial sampling location in the direction of the piping. Additional soil sampling will be designed to adequately characterize soil contamination to implement the Subsurface Soil Risk Screen.

2.2 IHSS, PAC, AND TANK SAMPLING

Sampling locations at IHSSs, PACs, and Tanks in IHSS Group 000-2 overlap with known and suspected OPWL leak location sampling. Proposed sampling specifications (number and types of samples) are listed in Table 4 and shown on Figure 6.

2.2.1 PAC 100-602 – Building 123 Process Waste Line Break

The soil surrounding Valve Vault 18 will be sampled as part of IASAP Addendum #IA-03-11 activities. Additional locations were sampled as part of the UBC 123 accelerated action (DOE 2003b).

2.2.2 IHSS 123.2 – Valve Vault West of Building 707

No additional samples will be collected in IHSS 123.2. Location CE42-002 is listed as known OPWL leak location P-14-1.

2.2.3 IHSS 147.1 – Process Waste Line Leaks

Subsurface soil will be sampled at the intersection of OPWLs P-11, P-12, and P-13.

2.2.4 Tank 29

Three samples (CH46-007, CH46-008, and CG46-009) were collected from beneath the Tank 29 (Tank 207 when it was removed). Additional sampling locations are not required.

2.2.5 Tank 31

One sample, described in Tables 3 and 4 will be collected from the soil beneath Tank 31.

Table 4
Sampling Specifications IHSS Group 000-2

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
000-2	IHSS 121 – OPWL – Known Leaks P-14-1								
		CE42-002	2083650.440	749877.784	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CE42-002	2083650.440	749877.784	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CE42-002	2083650.440	749877.784	Subsurface Soil	2.5-4.5'	SVOCs	N/A	8270
		CE42-002	2083650.440	749877.784	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CE42-002	2083650.440	749877.784	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CE42-002	2083650.440	749877.784	Subsurface Soil	4.5-6.5'	SVOCs	N/A	8270
		CE42-002	2083650.440	749877.784	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	Alpha Spec
		CE42-002	2083650.440	749877.784	Subsurface Soil	6.5-8.5'	Metals	6200	6010
		CE42-002	2083650.440	749877.784	Subsurface Soil	6.5-8.5'	SVOCs	N/A	8270
	P-4-2	CE38-000	2083666.716	749015.154	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CE38-000	2083666.716	749015.154	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CE38-000	2083666.716	749015.154	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CE38-000	2083666.716	749015.154	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CE38-000	2083666.716	749015.154	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CE38-000	2083666.716	749015.154	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CE38-000	2083666.716	749015.154	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	Alpha Spec
		CE38-000	2083666.716	749015.154	Subsurface Soil	6.5-8.5'	Metals	6200	6010
	P-40-2	CW46-000	2087218.148	750616.717	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CW46-000	2087218.148	750616.717	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CW46-000	2087218.148	750616.717	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CW46-000	2087218.148	750616.717	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	Alpha Spec
		CW46-000	2087218.148	750616.717	Subsurface Soil	6.5-8.5'	Metals	6200	6010
		CW46-000	2087218.148	750616.717	Subsurface Soil	6.5-8.5'	VOCs	8260	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
000-2	IHSS 121 – OPWL – Suspected Leaks P-4								
		BW38-005	2082120.492	749024.920	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BW38-005	2082120.492	749024.920	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		BW38-005	2082120.492	749024.920	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		BX38-024	2082237.679	749028.175	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BX38-024	2082237.679	749028.175	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		BX38-024	2082237.679	749028.175	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		BY38-012	2082533.903	749015.154	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BY38-012	2082533.903	749015.154	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		BY38-012	2082533.903	749015.154	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		BY38-013	2082413.460	749011.899	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BY38-013	2082413.460	749011.899	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		BY38-013	2082413.460	749011.899	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		BZ38-014	2082643.812	749019.634	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		BZ38-014	2082643.812	749019.634	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		BZ38-014	2082643.812	749019.634	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CA38-011	2082746.634	749019.634	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CA38-011	2082746.634	749019.634	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CA38-011	2082746.634	749019.634	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CA38-012	2082838.209	749019.634	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CA38-012	2082838.209	749019.634	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CA38-012	2082838.209	749019.634	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CB38-006	2082940.227	749019.634	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CB38-006	2082940.227	749019.634	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CB38-006	2082940.227	749019.634	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CB38-007	2083026.983	749018.831	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CB38-007	2083026.983	749018.831	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CB38-007	2083026.983	749018.831	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CC38-000	2083230.518	749011.899	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
		CC38-000	2083230.518	749011.899	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CC38-000	2083230.518	749011.899	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CD38-000	2083516.976	749018.409	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CD38-000	2083516.976	749018.409	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CD38-000	2083516.976	749018.409	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CD38-001	2083429.085	749015.154	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CD38-001	2083429.085	749015.154	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CD38-001	2083429.085	749015.154	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CD38-002	2083341.195	749011.899	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CD38-002	2083341.195	749011.899	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CD38-002	2083341.195	749011.899	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CH47-003	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
	P-27	CH47-003	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH47-003	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH47-004	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH47-004	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH47-004	2084181.039	750851.092	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH47-006	2084179.664	750944.394	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH47-006	2084179.664	750944.394	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH47-006	2084179.664	750944.394	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH48-022	2084137.157	750990.766	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH48-022	2084137.157	750990.766	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH48-022	2084137.157	750990.766	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH48-023	2084164.207	750992.698	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH48-023	2084164.207	750992.698	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH48-023	2084164.207	750992.698	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
	P34.1	CH48-024	2084181.597	750965.648	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH48-024	2084181.597	750965.648	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH48-024	2084181.597	750965.648	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH47-005	2084152.614	750778.230	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CH47-005	2084152.614	750778.230	Subsurface Soil	2.5-4.5'	Metals	6200	6010

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
700-3	P-39	CH47-005	2084152.614	750778.230	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CQ44-000	2085968.148	750287.941	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CQ44-000	2085968.148	750287.941	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CQ44-000	2085968.148	750287.941	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
		CQ44-001	2086023.487	750284.685	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CQ44-001	2086023.487	750284.685	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CQ44-001	2086023.487	750284.685	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
		CQ44-002	2086026.742	750216.326	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CQ44-002	2086026.742	750216.326	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CQ44-002	2086026.742	750216.326	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
	P-40	CR44-000	2086140.674	750281.430	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CR44-000	2086140.674	750281.430	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CR44-000	2086140.674	750281.430	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
		CV46-000	2087117.237	750626.482	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CV46-000	2087117.237	750626.482	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CV46-000	2087117.237	750626.482	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
		CG47-005	2084093.148	750890.154	Subsurface Soil	2.5-4.5'	Radionuclides	HPGe	Alpha Spec
		CG47-005	2084093.148	750890.154	Subsurface Soil	2.5-4.5'	Metals	6200	6010
		CG47-005	2084093.148	750890.154	Subsurface Soil	2.5-4.5'	VOCs	8260	8270
		CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
700-3	IHSS 121 - OPWL Known Leaks P34-2	CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CG47-005	2084093.148	750890.154	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CG47-005	2084093.148	750890.154	Subsurface Soil	6.5-8.5'	Radionuclides	HPGe	Alpha Spec
		CG47-005	2084093.148	750890.154	Subsurface Soil	6.5-8.5'	Metals	6200	6010
		CG47-005	2084093.148	750890.154	Subsurface Soil	6.5-8.5'	VOCs	8260	8270
		CH46-014	2084171.936	750708.672	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH46-014	2084171.936	750708.672	Subsurface Soil	4.5-6.5'	Metals	6200	6010
700-3	IHSS 121 - OPWL Suspected Leaks P-43/Tank 29	CH46-014	2084171.936	750708.672	Subsurface Soil	4.5-6.5'	VOCs	8260	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
		CH46-015	2084154.547	750724.130	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH46-015	2084154.547	750724.130	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH46-015	2084154.547	750724.130	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CH46-010	2084151.742	750743.670	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		CH46-010	2084151.742	750743.670	Subsurface Soil	4.5-6.5'	Metals	6200	6010
		CH46-010	2084151.742	750743.670	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
	IHSS, PAC, Tank Sampling								
		BU38-017	2081732.394	748975.277	Subsurface Soil	4.5-6.5'	Radionuclides	HPGe	Alpha Spec
		BU38-017	2081732.394	748975.277	Subsurface Soil	4.5-6.5'	Metals	6200	6010
	Tank 31	BU38-017	2081732.394	748975.277	Subsurface Soil	4.5-6.5'	VOCs	8260	8270
		CO44-000	2085607.974	750261.013	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CO44-000	2085607.974	750261.013	Subsurface Soil	8.5-10.5'	Metals	6200	6010
	IHSS 147.1	CO44-000	2085607.974	750261.013	Subsurface Soil	8.5-10.5'	VOCs	8260	8270
		CE40-000	2083663.530	749379.937	Subsurface Soil	8.5-10.5'	Radionuclides	HPGe	Alpha Spec
		CE40-000	2083663.530	749379.937	Subsurface Soil	8.5-10.5'	Metals	6200	6010
		CE40-000	2083663.530	749379.937	Subsurface Soil	8.5-10.5'	VOCs	8260	8270

**THIS TARGET SHEET REPRESENTS AN
OVER-SIZED MAP / PLATE FOR THIS
DOCUMENT**

**Industrial Area Sampling and
Analysis Plan FY03 Addendum No.
IA-03-11 IHSS Group 000-2
Original Process Waste Lines**

**Figure 5:
IHSS Group 000-2 Proposed Sample
Locations**

September 2003

CERCLA Administrative Record document, IA - 0 - 00022

**U.S. DEPARTMENT OF ENERGY
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

GOLDEN, COLORADO

IA - A - 001680

2.3 SAMPLING STRATEGY

The sampling strategy for the OPWL (IHSS 000-121) is consistent with the recent RFCA Modification (DOE et al 2003). In accordance with RFCA Attachment 14, the sampling methodology is described below.

Soil associated with OPWLs between 3 and 6 feet below the surface in areas with reported leaks will be characterized to 8 feet below the surface in accordance with the IASAP (DOE 2001) at the leak location. Reported OPWL leaks between 3 and 6 feet below the surface are listed in Table 3. Table 3 also lists the IHSS Group associated with the reported leak. Only those reported leaks not addressed through other IHSS Group characterization activities will be addressed in this IASAP addendum. Reported leaks are shown on Figure 3.

If initial characterization results indicate soil activity is greater than 3 nanocuries per gram (nCi/g), additional sampling will be conducted as follows:

- At locations perpendicular to the pipe run and 2 meters from the original sampling location;
- At locations between 5 and 10 meters on either side of the original sampling location; and
- At locations to adequately characterize soil to implement the Subsurface Soil Risk Screen (RFCA Attachment 5 [DOE et al. 2003]) based on step-out sampling.

Areas with suspected OPWL leaks are listed in Table 3 along with the associated IHSS Group. Only those suspected leaks not addressed through other IHSS Group characterization activities will be addressed in this IASAP addendum. Suspected leaks are shown on Figure 3.

If initial characterization results indicate soil activity is greater than 3 nCi/g, additional sampling will be conducted as follows:

- At locations perpendicular to the pipe run and 2 meters from the original sampling location;
- At locations between 5 and 10 meters on either side of the original sampling location; and
- To adequately characterize soil to implement the subsurface soil risk screen (DOE et al. 2003) based on step-out sampling.

Soil associated with OPWLs will be characterized in accordance with the IASAP (DOE 2001).

3.0 REFERENCES

DOE, 1992 – 2002, Historical Release Report for the Rocky Flats Plant, Golden, Colorado.

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2003a, Draft Environmental Restoration RFCA Standard Operating Protocol Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2003b, Closeout Report for IHSS Groups 100-4 (UBC 123, IHSS 148, PAC 100-611 and 100-5 (PAC 100-609), Rocky Flats Environmental Technology Site, Golden, Colorado, March.

DOE, 2003c, Final Industrial Area Sampling and Analysis Plan Addendum #IA-03-04 700-3 Area, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachments, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

Figure 1
IHSS Group 000-2
Location

KEY

- IHSS
- PAC
- OPWL
- Paved area
- Dirt road
- Stream, ditch, or drainage
- Building
- Demolished
- Standing

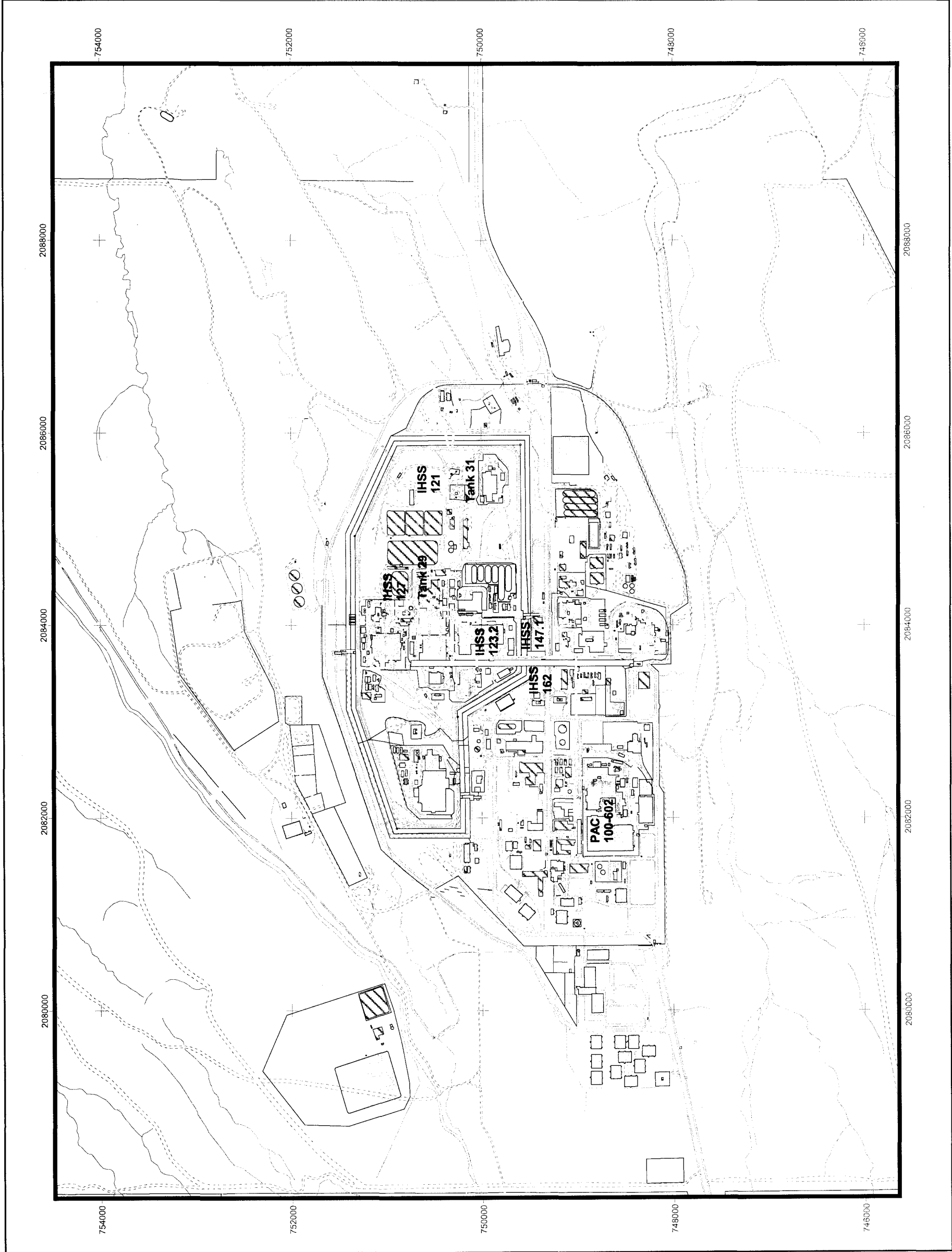
Scale = 1: 11500
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27


U.S. Department of Energy
Rocky Flats Environmental Technology Site


Prepared by: **RADMS**

Prepared for: **KAISER+HILL COMPANY**

000-2 Characterization 4-2-03 sps apr/000-2 Figure 1
September, 2003



Prepared by:  RADMS

Prepared for:  KAISER-HILL
COMPANY

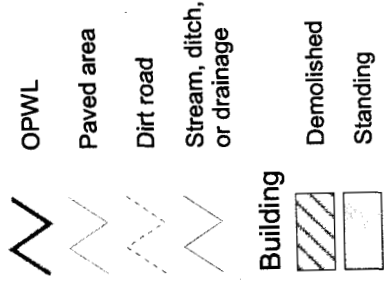
000-2characterization4-2-03sps.apr/000-2Figure1

September, 2003

000-2characterization4-2-03sps.apr/000-2Figure1
September, 2003

Figure 2
IHSS Group 000-2
OPWL Designations

KEY



200 0 200 400 Feet

Scale = 1:6,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RADMS

Prepared for:



000-2characterization4-2-03sps.apr/000-2Figure2
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